

Date of Deposit Jun. 4, 2001

Typed Name of Person Mailing Paper or Fee: Betty Hinkle

Typed Name of Person Mailing Paper or Fee: Betty Hinkle
Signature: Betty Hinkle

SYSTEM AND METHOD FOR TRANSFERRING SCANNED IMAGING DATA TO A PERSONAL IMAGING REPOSITORY

Shell S. Simpson
Ward S. Foster
Kris R. Livingston

1 Inventors: Shell Simpson; Ward S. Foster; Kris R. Livingston

2 SYSTEM AND METHOD FOR TRANSFERRING SCANNED IMAGING
3 DATA TO A PERSONAL IMAGING REPOSITORY

4 The present invention generally relates to an improved system
5 and method for transferring scanned imaging data from a scanning device to a
6 personal imaging repository. More specifically, it relates to an improved
7 system and method for transferring scanned imaging data from a scanning
8 device to a personal imaging repository having an imaging data store for
9 storing the imaging data and a composition store for storing imaging
10 compositions having links to the imaging data serviced as a single unit.

11 To access imaging data scanned from a scanning device generally
12 requires that the scanning device be connected to a personal computer ("PC")
13 having specialized software that allows the user to save the scanned image,
14 which is typically stored on the user's PC hard disk. However, in order for the
15 user to use these scanned images, the user must typically interact with another

1 software program. For example, it is currently quite popular to convert the
2 images to a Portable Document Format ("PDF") file. It should be understood
3 that the term "imaging data" as read herein refers digital data capable of being
4 represented as two dimensional graphics, such as a PDF file or a Joint
5 Photographic Experts Group ("JPEG") file. Currently, because various
6 programs must be used by the user to utilize these imaging data, it is often
7 necessary for the user to know exactly where these selected images were stored
8 when they were transferred from the scanning device, and it can be difficult to
9 locate the images as a result of the user using multiple programs.

10 There are currently prior methods that attempt to make the use of
11 scanned imaging data more readily available and store the imaging data in the
12 user desired format. One of these methods allows the user to send the scanned
13 imaging data to an email address without necessarily being connected to a PC.
14 However, this method applies only to emailing the scanned image. If the user
15 wants the scanned image in another format, the user still must pick up the
16 image from email and convert the scanned image to the desired format.

17 Another known method allows the user to scan an image into a
18 web browser. In this method, the user browses to the web browser to scan on a
19 particular scanning device that is connected to this web browser. After the user
20 scans the image, the image will be displayed as a JPEG image on the browser.
21 The user, using the browser, can then copy, paste, save or print the scanned
22 image.

23 A related method scans to a web server, rather than the web
24 browser. The user can predefine the web server's location prior to scanning or
25 at the time of the scanning. In this method, the scanned imaging data is simply
26 posted on the web site of the web server, which can then be accessed by the
27 user from a browser. Again, the problem with both of these prior methods is

1 that if the user desires to utilize the scanned image further, the user may have to
2 locate the image from where it was last saved or use yet another software
3 program to convert the scanned image into another format.

4 BRIEF SUMMARY OF THE INVENTION

5 The present invention is directed to an improved system and
6 method for transferring scanned imaging data from a scanning device to a
7 personal imaging repository. More particularly, the present invention relates to
8 a system and method for transferring scanned imaging data from a scanning
9 device to a personal imaging repository having an imaging data store for
10 storing the imaging data and a composition store for storing imaging
11 compositions having links to the imaging data serviced as a single unit.

12 The present invention provides a system that includes a scanning
13 device that is capable of reading an item or indicia for scanning imaging data, a
14 personal imaging repository associated with a particular user for storing
15 imaging data that is to be accessed by requested web services, an item or
16 indicia, such as a smart card for storing user information relating to the
17 personal imaging repository, and a device firmware for storing scanned
18 imaging data from the scanning device into the personal imaging repository.
19 The personal imaging repository is an exchange infrastructure between the
20 imaging data and the available web services on the Internet.

21 The present invention further provides a method that includes the
22 steps of receiving the scanned imaging data, obtaining user information relating
23 to the personal imaging repository, connecting with the imaging data store of
24 the personal imaging repository indicated from the user information, and
25 transferring the scanned imaging data to the imaging data store.

DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a preferred architectural diagram of a network system in which the present invention can be implemented;

FIG. 2 is an architectural diagram of a second network system in which the present invention can be implemented; and,

FIG. 3 is a flowchart illustrating the preferred functionality of the scan method of the present invention.

GLOSSARY OF TERMS AND ACRONYMS

The following terms and acronyms are used throughout the detailed description:

Client-Server. A model of interaction in a distributed system in which a program at one site sends a request to a program at another site and waits for a response. The requesting program is called the "client," and the program which responds to the request is called the "server." In the context of the World Wide Web (discussed below), the client is a "Web browser" (or simply "browser") which runs on the computer of a user; the program which responds to browser requests by serving Web pages, or other types of Web content, is commonly referred to as a "Web server."

Composition store. Composition store refers to a network service or a storage device for storing imaging composition(s) that can be accessed by the user or other web services.

Content. A set of executable instructions that is served by a server to a client and that is intended to be executed by the client so as to provide the client with certain functionality. Web content refers to content that is meant to be executed by operation of a Web browser. Web content, therefore, may non-exhaustively include one or more of the following: HTML

1 code, SGML code, XML code, XSL code, CSS code, Java applet, JavaScript
2 and C-"Sharp" code.

3 Exchange infrastructure. An exchange infrastructure is a
4 collection of services distributed throughout a network that stores imaging data
5 associated with a particular user through a user profile.

6 Hyperlink. A navigational link from one document to another,
7 from one portion (or component) of a document to another, or to a Web
8 resource, such as a Java applet. Typically, a hyperlink is displayed as a
9 highlighted word or phrase that can be selected by clicking on it using a mouse
10 to jump to the associated document or document portion or to retrieve a
11 particular resource.

12 Hypertext System. A computer-based informational system in
13 which documents (and possibly other types of data entities) are linked together
14 via hyperlinks to form a user-navigable "web."

15 Imaging composition. An imaging composition comprises links
16 to imaging data serviced as a single unit.

17 Imaging data. Imaging data refers to digital data capable of being
18 represented as two dimensional graphics, such as a Portable Document Format
19 ("PDF") file or a Joint Photographic Experts Group ("JPEG") file.

20 Imaging data store. Imaging data store refers to a network
21 service or a storage device for storing imaging data that can be accessed by the
22 user or other network services. The imaging data store preferably accepts the
23 imaging data in multiple standard file formats, and the imaging data is
24 converted into these file formats when necessary depending on the
25 implementation.

26 Internet. A collection of interconnected or disconnected networks
27 (public and/or private) that are linked together by a set of standard protocols

1 (such as TCP/IP and HTTP) to form a global, distributed network. (While this
2 term is intended to refer to what is now commonly known as the Internet, it is
3 also intended to encompass variations which may be made in the future,
4 including changes and additions to existing standard protocols.)

5 World Wide Web ("Web"). Used herein to refer generally to both
6 (i) a distributed collection of interlinked, user-viewable hypertext documents
7 (commonly referred to as Web documents or Web pages) that are accessible via
8 the Internet, and (ii) the client and server software components which provide
9 user access to such documents using standardized Internet protocols. Currently,
10 the primary standard protocol for allowing applications to locate and acquire
11 Web documents is HTTP, and the Web pages are encoded using HTML.
12 However, the terms "Web" and "World Wide Web" are intended to encompass
13 future markup languages and transport protocols which may be used in place of
14 (or in addition to) HTML and HTTP.

15 Web Site. A computer system that serves informational content
16 over a network using the standard protocols of the World Wide Web.
17 Typically, a Web site corresponds to a particular Internet domain name, such as
18 "HP.com," and includes the content associated with a particular organization.
19 As used herein, the term is generally intended to encompass both (i) the
20 hardware/software server components that serve the informational content over
21 the network, and (ii) the "back end" hardware/software components, including
22 any non-standard or specialized components, that interact with the server
23 components to perform services for Web site users. Importantly, a Web Site
24 can have additional functionality, for example, a Web site may have the ability
25 to print documents, scan documents, etc.

26 HTML (HyperText Markup Language). A standard coding
27 convention and set of codes for attaching presentation and linking attributes to

1 informational content within documents. (HTML 2.0 is currently the primary
2 standard used for generating Web documents.) During a document authoring
3 stage, the HTML codes (referred to as "tags") are embedded within the
4 informational content of the document. When the Web document (or HTML
5 document) is subsequently transferred from a Web server to a browser, the
6 codes are interpreted by the browser and used to display the document.
7 Additionally in specifying how the Web browser is to display the document,
8 HTML tags can be used to create links to other Web documents (commonly
9 referred to as "hyperlinks"). For more information on HTML, see Ian S.
10 Graham, The HTML Source Book, John Wiley and Sons, Inc., 1995 (ISBN
11 0471-11894-4).

12 HTTP (HyperText Transport Protocol). The standard World
13 Wide Web client-server protocol used for the exchange of information (such as
14 HTML documents, and client requests for such documents) between a browser
15 and a Web server. HTTP includes a number of different types of messages
16 which can be sent from the client to the server to request different types of
17 server actions. For example, a "GET" message, which has the format GET
18 <URL>, causes the server to return the document or file located at the specified
19 URL.

20 URL (Uniform Resource Locator). A unique address which fully
21 specifies the location of a file or other resource on the Internet or a network.
22 The general format of a URL is protocol://machine address:port/path/filename.

23 User Information. User information is identification and security
24 information used in accessing imaging composition(s) and imaging data
25 associated with a particular user profile. It is preferably accessed either
26 directly or indirectly through methods provided by an extension component
27 integrated into the web browser.

1 PDA (Personal Digital Assistant). A small hand-held computer
2 used to write notes, track appointments, email and web browser with generally
3 with far less storage capacity than a desktop computer.

4 Personal imaging repository. A personal imaging repository is a
5 conceptual term describing the exchange infrastructure used to exchange
6 imaging composition and imaging data with web services. Users are associated
7 with their imaging data through user profiles.

8 DETAILED DESCRIPTION

9 Broadly stated, the present invention is directed to an improved
10 system and method for transferring scanned imaging data from a scanning
11 device to a personal imaging repository. The system and method provide for
12 transferring scanned imaging data from a scanning device capable of reading
13 smart cards to a personal imaging repository having an imaging data store for
14 storing the imaging data and a composition store for storing imaging
15 compositions having links to the imaging data serviced as a single unit. In
16 addition, the personal imaging repository acts as an exchange infrastructure for
17 any available web services on the Internet. As a result, users can utilize images
18 from a scanning device more readily and easily.

19 The preferred network system in which the present invention can
20 be implemented is shown in FIG. 1 and indicated generally at 10. Because
21 there are numerous ways of implementing the network topology of the present
22 invention, the current preferred network system is just one way to implement
23 the present invention. As a result, it should be understood that other network
24 topologies are contemplated and are within the scope of the present invention.
25 In the preferred embodiment, an imaging client computer 12 is connected to a
26 scanning device 14 via a connection link 16. The scanning device further

1 includes a user interface 18 and a device firmware 22. The user interface 18
2 provides a way for the users to interact with the scanning device to request
3 certain functionalities, such as scanning. The device firmware 22, on other
4 hand, includes specific programming instructions that make certain
5 functionalities of the scanning device available.

6 For the imaging client 12, it preferably includes a browser 24 and
7 a personal imaging repository 26. The personal imaging repository 26 includes
8 a composition store 28 for storing imaging composition(s) 30, 30', 30" of the
9 imaging data that are serviced as a single unit and an imaging data store 32,
10 i.e., digital memory, for storing the imaging data 34, 34', 34". An imaging
11 composition 30, 30', 30" preferably comprises links to the imaging data, which
12 can be located at another web service's site. As a result, the composition store
13 34 stores only the imaging compositions 30, 30', 30". The imaging data store
14 32, 32', on the other hand, is any imaging data store located on any computer
15 that contains the imaging data 34, 34', 34". More specifically, each web service
16 can have its own imaging data store 32' available to the public.

17 For example, at some previous time, a user may print an article
18 from a web service site 36, resulting in an imaging composition 30' being
19 created and stored in the user's composition store 28. The imaging composition
20 30' contains only the link to the imaging data 34' for this article stored on the
21 web service site 36. Consequently, the imaging data 34' for the article is not in
22 the imaging data store 32 located on the imaging client 12. Rather, the imaging
23 data 34' is stored in the imaging data store 32' located on the web service site
24 36. Of course, users will have an imaging data store 32 that belongs to their
25 user identification where they can store imaging data 34, 34", which is the
26 imaging data store shown in the imaging client 12. As a result, the term
27 "personal imaging repository" 26 is meant as a conceptual term for an

1 exchange infrastructure between the imaging data and the available web
2 services on the Internet. Similarly, the term "web" denotes millions of distinct
3 servers that comprise the web. However, the web does not actually do
4 anything itself. Similarly, the servers serving the composition store 28 and the
5 imaging data stores 32, 32' are physical implementations of the personal
6 imaging repository as a concept.

7 In this implementation, the scanning device 14 is capable of
8 reading items, such as smart cards 38, which are inserted into the scanning
9 device by a user who wants to scan on the device. The smart card 38 is a
10 plastic card (e.g., similar to a credit card) with an embedded integrated circuit
11 for storing information. In this case, the smart card contains user information
12 relating to the personal imaging repository 26, such as a composition store
13 reference 40 and an imaging data store reference 42. While the smart card is a
14 preferred implementation for use with the scanning device 14, it should be
15 understood that other items may be used. For example, an item may have a bar
16 code or other optically, magnetically or electronically encoded information that
17 could be scanned. Other items, such as a transponder could be employed. The
18 important consideration is that the item has sufficient informational capacity
19 and that information can be read by the scanning device 14 or otherwise
20 transferred to it. The user information references 40, 42 instruct the scanning
21 device where to store the scanned imaging data.

22 As a result, the personal imaging repository 26 becomes the
23 exchange infrastructure for the imaging data for the web services that are
24 available on the Internet. Users no longer have to remember in which directory
25 they placed the scanned imaging data. Furthermore, the user will no longer be
26 asked where to store the scanned imaging data, because it is automatically

1 stored in the personal imaging repository when the user scans an imaging data
2 on the scanning device.

3 In this preferred implementation, whenever an imaging data 34,
4 34' is scanned from the scanning device 14, the imaging data will be stored
5 automatically in the personal imaging repository 26 that is associated with the
6 user information provided to the scanning device. In other words, users will no
7 longer be asked to indicate a place where the imaging data should be saved to.
8 Rather, the imaging data from the scanning device will be automatically
9 transferred to the user's personal imaging repository 26. From the personal
10 imaging repository 26, other web services that are available on the Internet
11 should be configured to look into the personal imaging repository 26 to access
12 particular imaging data that have been requested for servicing.

13 It should be noted that the personal imaging repository 26 can
14 represent any type of data storage device. In fact, the data storage device 26
15 does not necessarily have to be located within the imaging client computer 12.
16 The personal imaging repository 26 can be located, for example, on another
17 storage medium, which the client machine can access through alternative
18 communication links. Although it is currently preferred to include the personal
19 imaging repository 26 with the imaging client 12, this would likely change as
20 bandwidth becomes faster and the popularity of the personal digital assistant
21 ("PDA") increases. These alternative implementations are contemplated and
22 should be considered to be within the scope of the present invention.

23 A second network system is shown in FIG. 2, and indicated
24 generally at 50. In this embodiment, the imaging client 52 is linked to a
25 scanning device 54 over a communication link 56. The imaging client 52
26 similarly includes a browser 58. However, unlike the previous implementation,
27 the personal imaging repository 60 is only linked to the imaging client 52. For

1 example, the personal imaging repository 60 is only a general data storage
2 device, or it may be another computer connected to the imaging client. In fact,
3 the imaging client 52 can be a PDA that links to the personal imaging
4 repository 60 by using a cradle, which is quite common for such PDAs. The
5 personal imaging repository 60 similarly includes a composition store 62 for
6 storing imaging compositions 64 and an imaging data store 66 for storing
7 imaging data 68. As shown, one of the imaging compositions 64' can be linked
8 to an imaging data 68' that is located on a web service site 70. Also, an
9 imaging composition 64" is a selected composition in the composition store,
10 meaning it will be selected for servicing.

11 Another difference from the previous embodiment is that, rather
12 than using smart cards, the user information is stored on any memory storage
13 72, which preferably includes a composition store reference 74 and an imaging
14 data store reference 76 for indicating a specific personal imaging repository
15 that the scanned imaging data should be stored in. Alternatively, numerous
16 personal imaging repository references can be stored in the memory storage 72.
17 The memory storage 72, in turn, can link to the scanning device 54, and, using
18 an user interface 78, select the specific personal imaging repository. There is
19 firmware 80 in the scanning device 54 that stores the scanned imaging data to
20 the personal imaging repository 60 indicated by user information. There are
21 numerous alternative ways to implement the network topology of the present
22 invention, and it should be understood that these other alternatives are
23 contemplated and within the scope of the present invention.

24 Turning to an important aspect of the present invention, a flow
25 chart of the preferred functionality of the scan method is shown in FIG. 3, and
26 indicated generally at 100. The scan method is initiated by the user scanning a
27 document on the scanning device (block 102). The scanning of a document

1 will cause the scanning device to receive an imaging data of the scanned
2 document (block 104). Next, the scanning device reads the store references
3 (block 106), which include the imaging store reference and the composition
4 store reference. The store references are preferably either stored on a smart
5 card or on a storage memory linked to the scanning device. In the preferred
6 implementation, it is preferred that a smart card identifying the personal
7 imaging repository (i.e., the store references) be inserted into the scanning
8 device before the user can use the scanning device to scan any document. In
9 the second implementation, the user information relating to the personal
10 imaging repository is preferably predefined before the scanning device can be
11 used for scanning.

12 After obtaining the information on the imaging data store from
13 the store references (block 106), the scanning device can now log into the
14 imaging data store service (block 108). At this point, it is determined whether
15 the connection to the imaging data store is successful (block 110), and if not, an
16 error message is sent to the user (block 112). Once it is established that a
17 connection to the imaging data store is successful (block 110), the scanning
18 device converts the imaging data into a predefined format, such as JPEG,
19 (block 114) and accordingly transfers the scanned imaging data in the
20 converted format to the imaging data store (block 116). The scanning device
21 obtains a reference to the transferred imaging data (block 118), and it will log
22 out of the imaging data store (block 120) and log into the composition store
23 (block 122). Again, it is determined whether the connection to the composition
24 store is successful (block 124). Another error message is sent to the user
25 (block 126) if the connection was unsuccessful (block 124). After a successful
26 connection to the composition store (block 124), the scanning device creates an
27 imaging composition (block 128) and adds the reference to the imaging data

1 stored in the imaging data store obtained earlier in the imaging composition
2 (block 130). This newly created imaging composition is then saved to the
3 composition store (block 132), and further set as a selected imaging
4 composition in the composition store (block 134). Because the imaging
5 composition is set as the selected composition, it will be used by web services
6 that make use of the selected composition of the personal imaging repository.
7 Finally, the scanning device logs out of the composition store (block 136),
8 which brings the scan method to an end (block 138) until the next scan is
9 initiated on the scanning device.

10 It should be noted that the order of the scan method can be varied
11 and changed depending on the implementation of the present invention. An
12 alternative method is logging into either one of the stores, and upon successful
13 connection, the scanning device then immediately logs into the other store prior
14 to performing any further steps. More specifically, for example, the scanning
15 device can first log into the imaging data store. Upon a successful connection
16 with the imaging data store, the scanning device next logs into the composition
17 store. Once it is established that the scanning device has successfully logged
18 into both the imaging data store and the composition store, only then would the
19 remaining steps be processed. This alternative method ensures that the imaging
20 data is not unnecessarily transferred to the imaging data store when an imaging
21 composition of the transferred imaging data can not be added to the
22 composition store due to a connection failure. This method is especially
23 preferred when the composition store resides on a separate location other than
24 the imaging client as shown in FIG. 2.

25 From the foregoing description, it should be understood that an
26 improved system and method for transferring scanned imaging data from a
27 scanning device to a personal imaging repository has been shown and

1 described, which has many desirable attributes and advantages. The system
2 and method provides for transferring scanned imaging data from a scanning
3 device to a personal imaging repository that acts as an exchange infrastructure
4 between the imaging data and web services that are available on the Internet.
5 Users no longer need to recall where their previous transferred images are
6 located on their hard disk. The present invention allows the user to transfer
7 scanned imaging data from a scanning device that allows for greater flexibility
8 for the user. In addition, users can manage their imaging data more easily with
9 fewer limitations.

10 While various embodiments of the present invention have been
11 shown and described, it should be understood that other modifications,
12 substitutions and alternatives are apparent to one of ordinary skill in the art.
13 Such modifications, substitutions and alternatives can be made without
14 departing from the spirit and scope of the invention, which should be
15 determined from the appended claims.

16 Various features of the invention are set forth in the appended
17 claims.